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EXAMINER	
NGUYEN, MICHELLE P	
ART UNIT	PAPER NUMBER
2851	

DATE MAILED: 09/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/934,272	DIDOMENICO ET AL.	
	Examiner	Art Unit	
	Michelle Nguyen	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b)

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 August 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

1. The Information Disclosure Statements, filed June 21, 2002 and September 6, 2002, are acknowledged. An initialed copy of the PTO-1449 is enclosed. It is noted that applicants have filed a large volume of prior art in the instant application. Some of these references do not appear material to the claimed invention. Applicants' attention is directed to *Rohm and Haas Co. v. Crystal Chemical Company, et al.*, 220 USPQ 289, *Ex Parte Morning Surf Corp.*, 230 USPQ 446, and *Penn Yan Boats, Inc. v. Sea Lark Boats, Inc.*, 175 USPQ 260.

Specification

2. The disclosure is objected to because:

(a) On page 7, lines 18-20, "In addition, the neutral density filter component **18** preferably is designed so that it substantially reflects ultraviolet but substantially passes infrared light" should be --In addition, the neutral density filter component **18** preferably is designed so that it substantially passes ultraviolet but substantially reflects infrared light--. (See page 8, lines 13-15, Fig. 1; Here the neutral density filter is described or shown as reflecting infrared light and passing ultraviolet light.).

(b) Reference character "73" has been used to designate both a third beam splitter and visible light (see page 10, line 6; page 14, line 2).

Appropriate correction is required.

Drawings

3. The drawings are objected to because:

(a) They fail to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 45.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 recites the limitation "a first light source capable of emitting at least one beam of light having known emission intensities corresponding to a plurality of infrared, visible, and ultraviolet spectra" in lines 2-4. Here it is understood that a single light source generates a single beam having infrared, visible, and ultraviolet components. However, applicant discloses only single light sources, each generating a single light

beam corresponding to infrared, visible *or* ultraviolet spectra (see Fig. 1). That is, none of applicant's light sources is described as generating a single beam having all three of infrared, visible *and* ultraviolet components. With respect to the aforementioned limitation, applicant may wish to change "and" to --or--.

Claims 2-13 include all limitations set forth in claim 1.

Claim 14 is rejected for reasons discussed above in connection with claim 1.

Claims 15-17 include all limitations set forth in claim 14.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to claim 1, the term "capable" renders the claim indefinite because it is unclear whether the limitations following the term are part of the claimed invention (see claim 1, lines 2, 6, 8).

Claims 2-13 include all limitations set forth in claim 1. (See also claim 6, line 3; claim 13, line 2).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,343,043 to Johnson.

With regard to claim 1, Johnson discloses a gas component analysis system, comprising:

a first light source (source 70) capable of emitting at least one beam (beam 22) of light having known emission intensities corresponding to a plurality of infrared, visible, and ultraviolet spectra (see Col. 4, lines 21-5, Col. 5, lines 55-60, Figs. 2, 5);

a reflection unit (rotating mirror 36) (see Figs. 3, 4);

a detection unit (detectors 48, 50, 52, 54) capable of receiving the beam and measuring received intensities corresponding to the plurality of light spectra (see Fig. 3); and

a processor (computer 118) capable of comparing the emission intensities and the received intensities and identifying a concentration of a component corresponding to the intensities (see Col. 10, lines 54-7, Figs. 2, 6-8).

With regard to claim 2, Johnson teaches the system of claim 1 further comprising:

a first off-axis reflector (primary focusing mirror 38) positioned to receive the beam from the first light source and reflect the beam toward the reflection unit, wherein the reflection unit is positioned to receive the beam from the off-axis reflector and reflect the beam (see Figs. 3, 4, Col. 5, lines 55-60); and

a second off-axis reflector (secondary mirrors 40, 42, 44, 46) positioned to direct the beam reflected by the reflection unit to be received by the detection unit (see Figs. 3, 4).

With regard to claim 3, Johnson teaches the system of claim 2 wherein each off-axis reflector comprises a parabolic (concave) mirror (see Col. 5, lines 1, 8-9, Fig. 3).

10. Claims 1, 8-14 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,343,043 to Johnson.

With regard to claims 1 and 9, Johnson discloses a gas component analysis system, comprising:

a first light source (source 70) capable of emitting at least one beam (beam 22) of light having known emission intensities corresponding to a plurality of infrared, visible, and ultraviolet spectra (see Col. 4, lines 21-5, Col. 5, lines 55-60, Figs. 2, 5);

a reflection unit (lateral transfer mirror 14) (see Fig. 2);

a detection unit (detectors 48, 50, 52, 54) capable of receiving the beam and measuring received intensities corresponding to the plurality of light spectra (see Fig. 3); and

a processor (computer 118) capable of comparing the emission intensities and the received intensities and identifying a concentration of a component corresponding to the intensities (see Col. 10, lines 54-7, Figs. 2, 6-8).

With regard to claim 8, Johnson teaches the system of claim 1 further comprising a reflector wheel (rotating mirror) positioned to spin about an axis and receive the beam

from the reflection unit and direct infrared components of the beam to the detection unit in pulses (see Col. 5, lines 4-21, Figs. 2-4).

With regard to claim 10, Johnson teaches the system of claim 1 wherein the reflection unit comprises a vertical retroreflective unit that includes at least three mirrors (reflecting surfaces 14a, 14b, 14c) (see Fig. 2).

With regard to claim 11, Johnson teaches the system of claim 1 wherein the first light source and the reflection unit are positioned so that the beam passes through a medium (exhaust plume 28) to be analyzed before reaching the reflection unit (see Fig. 2).

With regard to claim 12, Johnson teaches the system of claim 1 wherein the reflection unit and the detection unit are positioned so that the beam passes through a medium (exhaust plume 28) to be analyzed before reaching the detection unit (see Fig. 2).

With regard to claim 13, Johnson et al. teach the system of claim 1 wherein the detection unit comprises at least one of an infrared detector and one or more spectrometers capable of measuring received intensities corresponding to a plurality of non-infrared spectra (see Col. 5, lines 8-15, Fig. 3).

With regard to method claim 14, the structure of the gas component analysis system discussed above with respect to claim 1 renders the steps set forth in the method claim inherent to the operation of the system.

With regard to claim 18, please see discussion above with respect to claim 1.

11. Claims 1, 6, 7, 9, 14, 15 and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,401,967 to Stedman et al.

With regard to claims 1 and 9, Stedman et al. disclose a gas component analysis system, comprising:

a first light source (infrared radiation source 13) capable of emitting at least one beam of light having known emission intensities corresponding to a plurality of infrared, visible, and ultraviolet spectra (see Figs. 1, 2);

a reflection unit (mirror 34) (see Fig. 3);

a detection unit (photodetectors 35) capable of receiving the beam and measuring received intensities corresponding to the plurality of light spectra (see Fig 3); and

a processor (computer 17) capable of comparing the emission intensities and the received intensities and identifying a concentration of a component corresponding to the intensities (see Fig. 1).

With regard to claim 6, Stedman et al. teach the system of claim 1 wherein the beam of infrared light travels along an optical path (see path extending from opening 32) to the reflection unit (see Fig. 3), and further comprising:

a second light source (ultraviolet radiation source 12) capable of emitting a beam of ultraviolet light (see Figs. 1, 2);

a neutral density filter (dichroic mirror 19) positioned to direct (via reflection) the beam of ultraviolet light along the optical path to the reflection unit (see Col. 5, lines 34-8, 50-3, Figs. 2, 3; Here examiner applies applicant's

definition of a neutral density filter: a beam splitter, which acts as a beam combiner (see applicant's disclosure, page 6, line 21, page 8, lines 13-5). In accordance with this definition, the dichroic mirror of Stedman et al., which is a beam splitter and acts as a beam combiner, is a neutral density filter.).

With regard to claim 7, Stedman et al. teach the system of claim 6 wherein the neutral density filter is further positioned to direct (via transmission) the beam of infrared light to the reflection unit (see Col. 5, lines 50-3, Figs. 2, 3).

With regard to method claim 14, the structures of the gas component analysis systems discussed above and below with respect to claims 1, 6, 7 and 18-20 respectively, render the steps set forth in the method claim inherent to the operation of the systems.

With regard to method claim 15, the structures of the gas component analysis systems discussed below with respect to claims 4 and 19 render the steps set forth in the method claim inherent to the operation of the systems.

With regard to claim 18, Stedman et al. disclose a gas component analysis system, comprising:

a means (infrared radiation source 13) for emitting a first beam of infrared light having known emission intensities corresponding to a plurality of infrared spectra (see Col. 4, lines 11-6, Figs. 1, 2);

a means (rotating mirrored surface 27) for reflecting the first beam (see Figs. 1, 3);

a means (photodetectors 35) for receiving the first beam (see Fig. 3);

a means (see photodetectors 35) for measuring received intensities corresponding to the plurality of infrared spectra (see Figs. 3, 4); and

a means (see computer 17) for identifying a concentration of a component corresponding to the received intensities (see Figs. 1, 3).

With regard to claim 19, Stedman et al teach the system of claim 18 further comprising a means (filters 37) for filtering the first beam into a plurality of pulsed (via rotating mirrored surface 27) spectral components (see Fig. 3).

With regard to claim 20, Stedman et al. teach the system of claim 18 further comprising:

a means (ultraviolet radiation source 12) for emitting a second beam of ultraviolet light corresponding to a plurality of ultraviolet spectra (see Col. 4, lines 11-6, Figs. 1, 2);

a means (beam splitter 38) for reflecting the second beam (see Fig. 3);

a means (photomultiplier 44) for receiving the second beam (see Fig. 3); and

a means (see computer 17) for measuring received intensities corresponding to the plurality of ultraviolet spectra (see Figs. 1, 3).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stedman et al. as applied to claim 1 above, and further in view of U.S. Patent No. 6,275,290 to Cerni et al.

With regard to claims 4 and 5, Stedman et al. teach the system of claim 1 to further comprise a plurality of filters (filters 37) for wavelength selection, but do not teach the filters to constitute a filter wheel (see Col. 6, lines 54-66, Fig. 3). On the other hand, Cerni et al. teach a plurality of filters, each of which substantially limits the passage of light to a predetermined spectral wavelength or range of wavelengths, to constitute a filter wheel (filter wheel 1218) positioned to spin about an axis (axis 1219) and receive a beam from a first light source (sources a, b, n) and pass the beam to a reflection unit (detectors a, b, n) in pulses for wavelength selection (see Col. 6, lines 10-3, Col 16, lines 13-27, Fig. 12). It would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the filters of Stedman et al. with the filter wheel of Cerni et al. for providing alternative means for wavelength selection.

14. Claims 16, 17 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stedman et al. as applied to claims 14 and 18 above, and further in view of U.S. Patent No. 6,455,851 to Lord et al.

With regard to claim 16, Stedman et al. do not teach the method of claim 14 further comprising, before the detecting step, directing visible and ultraviolet components of the beam and directing infrared components of the beam to the detection unit. Instead, Stedman et al. teach, before the detecting step, directing only ultraviolet and infrared components (see infrared beam 42, ultraviolet beam 40) of the

beam to the detection unit (photodetectors 35, photomultiplier 44) (see Fig. 3). However, Lord et al. teach employing in the analysis of gases not only infrared and ultraviolet light, but also visible light for measuring dust (see Col. 11, lines 15-27). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add to the beam of Stedman et al. a visible component as taught by Lord et al. for measuring dust.

With regard to claim 17, Stedman et al. are silent as to the formula employed for calculating a component concentration in the identifying step discussed above with respect to claim 14. However, Lord et al. teach an identifying step performed by a processing device (PC) that is programmed to perform the calculation of a component concentration using a formula corresponding to the Beer-Lambert law (see Col. 15, lines 12-6). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ in the identifying step of Stedman et al. the Beer-Lambert law discussed by Lord et al. for calculating a component concentration of a gas.

With regard to claim 21, see discussion above with respect to claim 16.

Conclusion

15. The following prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. Patent No. 5,268,745 to Goody teaches a gas analysis system in which infrared and ultraviolet light sources, and filter wheels are used.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Nguyen whose telephone number is 703-305-2771. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703-308-2847. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.

mpn